Public yet private: the status, durability and visibility of handover sheets

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Abstract

This paper considers the role of handover sheets in supporting the work of nursing staff. Drawing on data from a multi-site case study of a range of clinical settings, we explore the form of these documents, the processes through which they are created and updated, and how they are used in practice. We argue that these documents function as both public and private documents, and consider the implications of this for technologies that wish to support the work of clinical handover.

1. Introduction

Effective handover is seen as a key tool in ensuring informational continuity (Junior Doctors Committee 2004). However, little is known about what makes an effective handover and a number of studies highlight the role of handover in adverse events [1-3]. The question of how to get handover 'right' is of escalating importance with an increase in shift patterns of working and more frequent transfer of patients between areas and organisations [4, 5].

A number of previous studies highlight the range of artifacts that may be used to support handover, ranging from formal, legal documents to informal 'scraps', and the different affordances that such artifacts provide. For example, in a study of nursing handovers, 'scraps' were seen by nurses as the most important source of written information, containing notes made by the nurse during the handover [6]. These scraps were kept in the nurse's pocket, allowing access at any time and any location. To create such artifacts, nurses may gather together information from a range of sources [7] and may highlighting particular information through, for example, using a different colour for recording what is perceived as particularly important information [8].

While previous studies have considered the work of handover in particular settings, the findings reported here come from a multi-site case study of a range of clinical settings. The study aims to model the collaborative work of handover and develop technology to support handover. As part of this study, we collected a range of nursing handover sheets, documents used by nursing staff that provide a summary of patient details, and explored how they were used in practice. This paper reports on the form of these documents, how they are created and maintained, and how their use fits within the more general work of clinicians.

2. Methods

2.1. Settings

Data was collected from five different settings across three different hospital Trusts (providers). The settings were a general medical ward, an emergency assessment unit (EAU), a paediatric surgical ward, a medical admissions unit (MAU), and a high dependency unit (HDU). Data will be collected from a further five case sites later in the project, following initial analysis of the data collected so far. Research Ethics Committee approval was obtained for this study and written consent was sought from both staff and patients that participated in the study.

2.2. Data collection

Data collection involved the observation and, where appropriate, audio recording of handovers, as well as time spent in the ward in order to understand the work of the setting. Informal interviews were also conducted with staff members to gain their perspective on the work of handover. Examples of artifacts used to support handover were gathered, and photographs of the settings were taken. A total of 450 hours of

observations were conducted between May and November 2007. Following each period of observation, the fieldnotes were written up and the audio recordings transcribed, and both were entered into Atlas.ti.

2.3. Analysis

To analyse the data gathered on nursing handover sheets and their use, we used Framework Analysis, an analytical approach developed for conducting applied qualitative research [9]. This involves moving through the stages of familiarisation, identification of a thematic framework, indexing, charting, and mapping and interpretation.

In developing the thematic framework, we drew on the theoretical perspective of Distributed Cognition [10], which is concerned with the content of cognitive artifacts (a term used to refer to the potentially broad range of artifacts that provide representations of information used in support of cognition within a particular system [11]) and how these are transformed in the accomplishment of work. A key concern is the characteristics of these artifacts (e.g. physical durability, functional durability), their physical configuration and the impact this has on the distribution of access to information and subsequent processing.

3. Findings

Below we introduce each case site and the process of nursing shift handovers, and provide narrative summaries of the form of the handover artifacts and how the artifacts were created, updated and used. Across all case sites, there were two nursing shift handovers a day, one in the morning and one in the evening.

3.1. General medical ward

The general medical ward included in this study is a 20 bed ward, with typically two nurses on each shift. During weekdays, the Ward Sister is also present. The nursing shift handovers take place at the nurses' station. A new handover process had been introduced by the Ward Sister, which required that both oncoming nurses were present for the handover of all patients, while previously each nurse would only have heard about the patients that she would be looking after.

At the time of data collection, the Ward Sister had recently introduced a new handover sheet. This consisted of two Word documents, one for each half of the ward, with a table for entering patients' details, ordered according to bed number. At the beginning of each shift, copies would be printed out for the oncoming nurses. The resulting handover sheet was a two-sided piece of A4 paper, with one table on each side. Some nurses continued to make their own handwritten notes during the handover, instead of using the printed handover sheet, despite the fact that this was against the handover guidelines introduced by the Ward Sister. During the handover, nurses add their own notes to the printed handover sheet, based on the verbal information that they are given.

The electronic copy is updated when time allows, by whoever is able to; on a couple of occasions, it was one of the student nurses who undertook this task. Updating the handover sheet involves asking questions of the nurses and health care assistant (HCA), but may also involve checking the medical record or nursing notes for a patient, to determine if a certain task has been completed (e.g. an ultrasound scan) or to find out the results of an investigation (e.g. an MRSA swab). Sometimes a change is made just to one patient's details, motivated by a conversation with a colleague. For example, on one occasion, the student nurse updated details of a patient's nutrition needs following a conversation with the dietician.

However, the handover sheet is not updated during every shift. During the data collection period, on one occasion the handover sheet appeared not to have been updated for a couple of days. It also seemed that the information on the handover sheet was not always correct; while details such as diagnosis would be correct, details of the patient's cognitive state or their mobility were sometimes incorrect.

The nurses often refer to the handover sheet when talking to colleagues about a patient. For example, the handover sheet may act as a prompt for questions, e.g. asking the HCA about the condition of a patient's pressure sores. The nurses need to update the Ward Sister, the physiotherapist, the social worker, the occupational therapist and the junior doctors about the state of patients and they refer to their handover sheets when doing this. The handover sheets also act as a resource for these other clinicians and allied health professionals (AHPs), some of whom take a copy each day.

At the end of the shift, the nurses often draw on the handover sheet, and the notes that they have made on it, when handing over to the oncoming nurses, in addition to drawing on a range of other possible resources, such as the ward round summary and the medical records.

3.2. Emergency Admissions Unit

The EAU is a 28 bed ward where patients who are to be admitted to hospital are assessed by the admitting team before being assigned to an appropriate ward. Depending on the time of day, there are between 5 and 6 nurses on duty, including one nurse who acts as the 'coordinator', liaising with the Accident and Emergency department and the hospital wards. The other nurses are split into two teams, with each team taking responsibility for the patients on one half of the ward. The oncoming nurses receive a verbal handover at the bedside from the nurse who has been looking after the patient for the previous shift, for all patients being looked after by their team.

Prior to the shift handover, oncoming nurses stand at the nurses' station, copying down the bed numbers and patient names from the whiteboard for the patients that will be looked after by their team. Sometimes these notes are made on a photocopied sheet that is formatted with appropriate headings; when these sheets are not available, nursing staff make their notes on a blank sheet of paper from the history pad. During the handover, the oncoming nurses make written notes. Following this shift handover, the oncoming nurses have to, one team at a time, update the coordinator about their patients. In doing this, they rely on the notes that they made during the handover. However, the flow of information is not one way; the coordinator may give them additional information about their patients, which they add to their notes.

Following the handover, some nurses check the medical record for their patient, particularly (as is most often the case) if it is a patient that they have not looked after before, and use that to add additional notes to the handover sheet. Further notes get added when a new patient arrives on the EAU. Other information may get passed on to the nurse regarding a patient she is looking after, such as what time they are going to theatre, and this will also get added to the handover sheet. One nurse was also observed, following the shift handover, copying notes from the handover sheet for the previous day onto the new handover sheet.

Nurses would sometimes refer to their handover sheet in order to answer a question about a patient. The main occasion on which the handover notes appeared to be used was when giving a verbal handover, either for a single patient to a ward or for multiple patients to oncoming nurses at the end of the shift; nurses appear to rely mainly on a combination of memory and their handover notes, while also referring to the observation chart and the drugs chart.

3.3. Paediatric surgical ward

The paediatric surgical ward included in this study is an 11 bed ward. The ward takes both elective and emergency paediatric surgical patients. During the day shift there are 4 nurses on, while the night shift has 3 nurses. The shift handover consists of a handover in the staff room, given by the outgoing charge nurse to all oncoming nurses, followed by a bedside handover between the outgoing and oncoming nurse for each patient. Following the morning shift handover, there is sometimes a team meeting in front of the whiteboard, where plans for surgery and discharge of all patients are briefly discussed.

The handover sheet consists of a Word document containing a table into which patients' details are entered, ordered by bed number. When printed, the table covers one side of A4 paper. Copies are printed out at the beginning of each shift for the oncoming nurses. On one occasion during the data collection period, the computer was not working so one of the nurses produced a written handover sheet which was then photocopied. During the handover, nurses add their own notes to the printed handover sheet.

The handover sheet is updated towards the end of each shift. Typically, the charge nurse takes responsibility for this, although other nurses may also add information. This may be about the patients that they are looking after or it may be about a patient being looked after by another nurse, with that nurse advising them of what to write. Generally, the nurses did not appear to need to refer to other documents when updating the handover sheet. On two occasions during data collection, a patient's name was spelt incorrectly on the handover sheet; on one of these occasions, the name on the handover sheet in fact bore no relation to the patient's name. In both cases, the mistake was pointed out by the outgoing charge nurse in the shift handover.

While the handover sheet was referred to during the shift, it seemed to be used less than observed in the other settings. The newly updated handover sheet (as opposed to the copy that she had used throughout the shift) would be used by the outgoing charge nurse in the first part of the shift handover, while the other outgoing nurses appeared to rely on the drug chart and observation chart for the bedside handover. The use of handwritten notes seen in other settings was not observed.

3.4. Medical Admissions Unit

The MAU is a 28 bed ward that patients are typically admitted to via Accident and Emergency or the EAU, prior to being transferred to a ward (while the EAU observed in this study was for patients who would either be admitted to hospital or who may be able to be discharged following initial investigations, the MAU was intended only for patients who needed to be admitted to a hospital ward). There are typically 4 nurses, including one charge nurse, on each shift. The nursing shift handover takes place in the staff room, with the outgoing charge nurse providing a verbal handover to the oncoming nurses. There is then a brief bedside handover between the outgoing and oncoming nurses for each patient.

The handover sheet is created using locally developed software designed largely to support bed management. When a patient is admitted to the ward, basic details (name, date of birth, sex) are uploaded to the software from the hospital's patient administration system (PAS). Ward staff then have to assign the patient to a bed number using the software. The software then allows additional information to be entered by the ward staff about each patient: diagnosis, past medical history, clinical information, investigations, discharge, notes. Using this information, the software is then able to generate a table, with the headings listed above, in a Word document, populated with both the information automatically uploaded from the PAS and the information entered by staff. The printed document normally covers three sides of A4 paper. While this software has been in place for some time, the ability to enter information about patients and generate a handover sheet is functionality that has only recently been added. This version of the software is being piloted in the MAU and the HDU, with the intention that it will be rolled out across the rest of the hospital if the pilot project is successful.

Handover sheets are printed before the shift handover. In the morning, an additional copy is printed for the physiotherapist, who also attends the morning nursing shift handover. As in other settings, oncoming nurses add notes to the printed sheet during the handover, based on the verbal information that they are given.

While the patient is assigned to a bed number using the software shortly after they arrive on the ward, it is typically not until the end of the shift is near that other patient details are entered and details of other patients updated. This is done by the charge nurse, gathering information from the nursing records, which are typically kept at the nurses' station, as well as verbal information from the nurses looking after the patients. When giving the shift handover, the charge nurse appears to rely on a combination of information from the newly printed handover sheet and information from memory.

If a patient is transferred from the MAU to the HDU, the information entered about them will become accessible to HDU staff and will automatically feed into their handover sheet.

3.5. High Dependency Unit

The HDU is a 13 bed ward that looks after patients that require continuous telemetry monitoring, as well as having a number of bed spaces specifically for coronary care patients. There are 6 nurses on during the day and 4 nurses at night. The nursing shift handover process is the same as for the MAU.

HDU uses the same software as the MAU and thus the format of the handover sheet is the same. However, HDU staff feel that the headings do not cover all the necessary topics that they need. Therefore, subheadings (e.g. wound care, mattress, falls risk, nutrition) are added by typing them in under the necessary sections for each patient. As on MAU, handover sheets are printed at the beginning of each shift and taken to the staff room where the shift handover takes place. Copies of the handover sheet are also used by the physiotherapist, the dietician and some of the junior doctors.

Entering and updating of patient details is done by the charge nurse, towards the end of the shift. This involves checking the patient folders (on the HDU, both medical and nursing notes are kept in one folder), which are normally kept around the nurses' station, and asking questions of the nurses who are looking after the patients.

4. Discussion and conclusions

The findings above describe the nursing handover sheets from five units across 3 hospital Trusts. The handover sheets take a variety of forms (although all provide a portable, foldable, scribble-able format) and there are a variety of processes through which they are created and updated.

What is consistent across all of the case sites is the ability of the handover sheets to act as both public and private documents, having relevance both for the ward or unit as a whole while also holding information for the individual, becoming 'personal workspaces' [12]. It is considered important by staff that they have a summary of all patients on the ward, not just those that

they are responsible for caring for. This allows them to respond to queries from relatives and to care for patients when a colleague goes on a break or has to leave the ward. Yet for the patients that they are caring for, they are able to add additional notes, about tasks to be completed, blood results that need to be chased up etc., so that the handover sheet becomes not only a summary of information but also a form of to do list, helping them to coordinate their work. We regard such dual functionality as something that needs to be supported by any technology that seeks to provide for the work of handover, if the handover sheet is to continue to act as a space for work, rather than just a repository of information.

The presence of incorrect or out of date information on some of the handover sheets raises questions about the status of some of the documents that we have considered. We would argue that, whether handwritten or produced as a Word document, handover sheets have typically been assigned the status of informal documents; paper copies are typically thrown away at the end of the shift and, in contrast to most documents used to record patient data, no audit trail or backup of these documents is maintained.

With the increasing presence of electronic patient records and patient administration systems, it seems likely that these documents will increasingly take on a more formal status, as in the MAU and the HDU, where the information that populates the handover sheet is recorded and available beyond the confines of the individual ward, giving it a permanence and visibility that contrasts strongly with the other forms of handover sheet currently being used in practice. If and when the version of the software used in the MAU and the HDU is rolled out across the rest of the hospital, information entered by staff will follow the patient to whichever wards they are subsequently transferred to, to be viewed, edited and used by staff on those wards. At present, the software is being developed to also support the doctors' handovers, so that both nursing and medical staff will be using the same information (with certain sections that are of relevance only for each group).

While a more formal, permanent and visible form of handover sheet may increase the accuracy of the information contained within it, which is of no doubt beneficial, there may be other consequences of such a change that are hard to predict. For example, in a previous project by two of this paper's authors, a large shared display was introduced into a paediatric ward to support medical handover [13]. The large display was achieved by taking a high-resolution digital photograph of the handover summary that would previously have been used by the presenting junior doctor in the handover and projecting this image onto the white wall of the handover room. It was found that displaying the information gave the document a role and a formality that the paper document did not, with the large display becoming a mechanism for submitting the work of the shift to the scrutiny of senior staff. A consequence of this was that the way in which the junior doctors used the handover summary changed, as did the information recorded in it, as they became reluctant to record tasks that had not been completed, despite the fact that this was important information to hand over.

While not making the information visible in the same way, we consider that simply making the information available to groups who have previously not had access to that information may result in certain types of information no longer being recorded. At present, with their status as informal documents and with no audit trail of when changes were made and by whom, those who update the handover sheets are not accountable for what they record. For example, in one of the case sites, someone had put a note on the handover sheet that the patient 'MUST NOT LEAVE HOSPITAL' because there were concerns that the patient, an elderly gentleman, was being abused by the relatives that were responsible for caring for him. There was certainly sensitivity about where this information was recorded and who may have access to it. The bold reminder on the handover sheet was of vital importance for this patient's care and we would not want such information to be lost because of fears of not being able to provide an adequate account for such concerns. Previous studies have highlighted how there may be information that is passed on in the verbal handover that is not recorded elsewhere; for example, on a paediatric ward, information may be passed on about how the parents are coping with their child's illness [14]. The handover sheet's status as an informal document provides a safe space where such information can be recorded.

4.1. Future work

While this paper has focused on the process through which handover sheets are created and maintained, we believe that there is also much to be gained from an analysis of the content of these documents and the codes and symbols used within them to represent patient data. Further analysis will pay attention to this topic, as well as to the content of verbal handovers, in order to develop an understanding of the information needs of clinicians in relation to handover.

So far, data has been collected from five case sites. Further data will be collected from a further five sites over the next twelve months. These will include a paediatric intensive care unit (PICU), an ambulance service for children requiring transfer to a PICU, a postnatal ward, a service supporting the transfer of paediatric long term ventilation patients from hospital to home, and the night team that cover all medical wards in one hospital. In doing so, we will seek to gather further data on topics that this initial analysis has highlighted. For example, while nurses kept their handover sheets with them and referred to them throughout the shift across all the case sites, the frequency with which the notes were referred to appeared to vary. This may be the result of a range of factors, such as the length of stay of patients, the nature of patient conditions and the tasks that need to be carried out in relation to their care, or the nurse patient ration. Reasons for this variation, and its significance for any technology that seeks to support handover, will be explored in the remaining case sites.

We will also seek to gather further data on staff understandings of the status of handover sheets and the information they contain, and attitudes to any changes to that status that may results from the introduction of technology for handover.

In addition, we will be returning to the MAU and HDU to collect further data as the introduction and iterative development of the software continues. This will allow us to follow how use of the handover sheet does, or does not, change over that time, both as the status of the document becomes clarified and as the visibility of the data it contains increases.

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